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A View of Part of the Business District of Cleveland, Ohio, as Seen from Lake Erie.

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THE JOURNAL OF GEOGRAPHY

A MAGAZINE FOR SCHOOLS

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VOLUME XXVII MARCH, 1928 NUMBER 3

GEOGRAPHIC INFLUENCES IN THE LOCATION AND GROWTH OF THE CITY OF MEMPHIS

R. W. JOHNSON
West Tennessee State Teachers College, Memphis

STRATEGIC LOCATION

In the expansion and growth of the United States the general movement has been from east to west. To this general movement the Mississippi has been a great barrier—a barrier far greater than a stream from one-fourth to one mile wide alone would offer. The fall of the Mississippi between St. Louis and the Gulf of Mexico, an air line distance of about 800 miles and 1,270 by the circuitous route of the stream, is only four inches a mile. Owing to this fact, the stream is very sluggish and in times of high waters overflows. In this way it has built up a flood-plain of considerable width. The stream meanders thru this flood-plain, seldom reaching either edge; however, at two points along the western boundary of Tennessee it has swung to the eastern edge and cut a steep wall against the higher adjacent land, forming bluffs. It is on the lower one of these bluffs that the city of Memphis was laid out in 1819 where the Indian Fort Chisca had stood for more than three hundred years. At the lower bluffs, the flood-plain is from two to three miles wide on the west side of the river and entirely absent on the east side. Above this point, the flood-plain is considerably wider and exists on either side of the stream, with the exception of the one place mentioned above. It is from two to ten times as wide below this point, and presents a far greater barrier than the river itself, because transportation can neither conform to either land or river type. Thus it follows, that the city, located at this strategic position on a bluff about fifty feet above high water mark, almost half way between Chicago and the Gulf of Mexico, and at a point where the stream is most easily crossed, has become known as the "Gateway to the South and Southwest."

Attention is here called to the fact that the geographic location of Memphis has had much to do with its growth and development as shown by its survival over its early rivals. Three of these, Mound City, Hopefield, and Pedraza, were located on the Arkansas side of the river. Commerce was located in the northwest corner of Mississippi. All these, because of their less favored geographic

FIG. 1. Map showing territory covered by six of the large wholesale firms of the city

location, were unable to compete with the young village on the bluff. Forty-two miles up the river at the upper bluff was a second strategic point, whose location favored the growth of a city. It was here that Memphis had its strong rival in the town of Randolph. Until 1837, Randoph was the greater commercial center of the two, and it was believed at that time that it would become the

greatest commercial and industrial city of the Southwest. In this same year, however, a financial panic in the form of a bank failure gave the young city such a business setback that its rival down the stream secured a commercial lead never to be overcome. From this date (1837) the commercial growth of Memphis has been rapid.

Today it is the natural trading center for west Tennessee, north Mississippi, and east Arkansas. In this area Memphis goods are used almost exclusively. However, large wholesale firms of the city supply retailers thruout the South with various lines of merchandise. Figure 1 shows the territory covered by six of the large wholesale firms of the city. The wholesale grocery industry includes a large central warehouse located in the city and twenty branch houses scattered thruout the trade territory. Each of the six classes of goods listed in the legend is found in the daily markets in both rural and urban districts. Freight rates and transient privileges on certain classes of goods determine the distance and direction from the distributing center from which they can be shipped with profit. For this reason, a distributing point is seldom located in the center of the area which it serves.

INFLUENCE OF TOPOGRAPHY

Memphis is located about the middle of the Mississippi valley, a region in which the cycle of erosion has so nearly completed itself that most of the entire area is either level or gently rolling. The greater part of the region is given over to agriculture, cotton being the leading crop. Other crops of large production in the Mississippi valley are corn, oats, tobacco, hay, sugar cane, and rice. Modern farm machinery can be used on practically all of the land of this region. The soil is in the main of alluvial formation and very fertile. These facts have created the conditions which are necessary for the production of a large amount of surplus farm products. A large percentage of the products, whether shipped by rail or water, is handled by and passes thru the Memphis markets. Because of the gentle gradient of the valley, two major difficulties have existed until recent time. The first of these is the damage done by the high waters in flood time.

Much of the flood-plain is only slightly above the level of the river, and some is even below. By a natural process the river has built up levees along its banks, but in many places this process has

been insufficient to prevent an overflow in time of high waters. Because of the great loss to crops and property, artificial levees have been constructed which save millions of dollars of property each year. The second great disadvantage, which is now being rapidly overcome, is that of drainage. Thousands of acres along the flood-plain of the Mississippi are now being reclaimed by proper drainage. Most of the reclaimed land is very fertile and produces high yields. The drainage system has done much to eradicate the mosquito and improve health conditions in the entire region.

The level and gently rolling surface of the region has made the building of railroads and highways rather easy and cheap. No solid rock is found near the surface in the Memphis vicinity, a condition which reduces to a minimum the cost of construction and excavation work and the laying of pipe lines. The difficult problem of street building, found in many of the hilly cities of our country, is not met with in Memphis.

The geologic structure of the region between the Mississippi and the northern course of the Tennessee river, including northern Mississippi and the western parts of Tennessee and Kentucky, a part of the Gulf Coastal plain, has given to Memphis one of the largest and best artesian water systems in the world. The Coastal Plain is about a hundred miles wide from east to west in the latitude of Memphis and narrows to a point at the mouth of the Ohio River. This plain is made up of nearly horizontal layers of sand and impervious clay, lying several hundred feet deep in the west and outcropping in the east near the Tennessee river (Fig 2). The elevation ranges from about 600 feet at the divide, which overlooks the flood-plain of the West Tennessee river valley, to about 300 feet along its western edge. The alternate layers of water-bearing sand, separated by impervious layers of clay, outcrop in belts running north and south near the eastern part of the plain. These strata, which dip gently to the west, give, when tapped, an abundant supply of pure artesian water. A new $3,000,000 water plant has been erected with twenty-two wells, 450 feet deep; seven, 1,400 feet; and one, 2,220 feet, with an average daily pumping capacity of 16,000,000 gallons for 1926. The maximum capacity is about 30,000,000 gallons a day. About 99 per cent of the occupied premises of the city is supplied from the central plant in 400 miles of water mains.

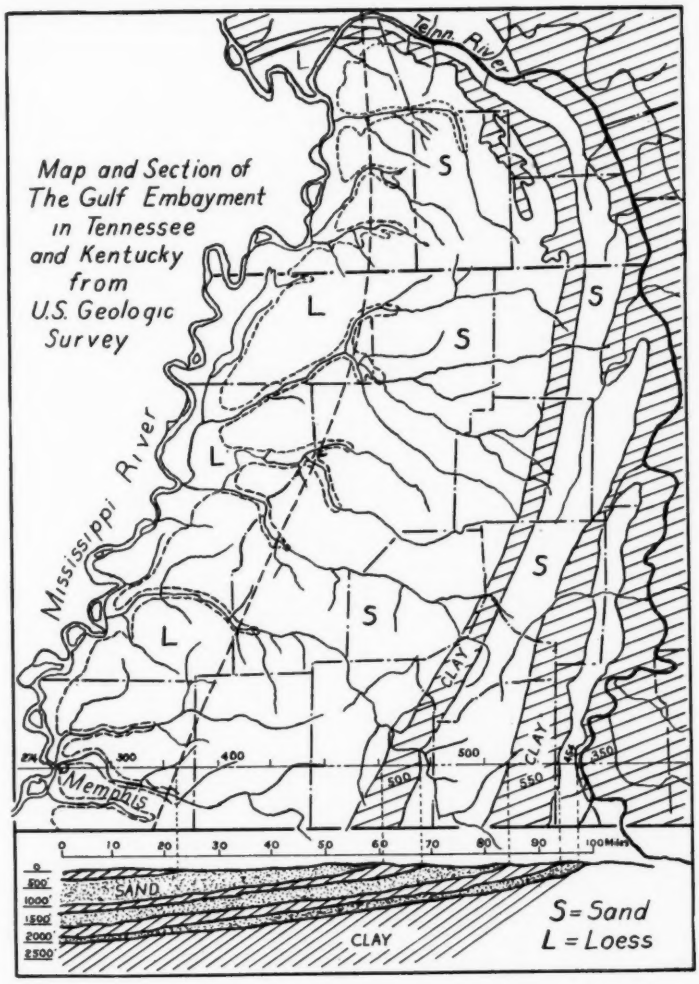

FIG. 2. Geologic map of region north and east of Memphis, showing alternate layers of sand and clay which make available an abundant supply of pure artesian water for the city

INFLUENCE OF CLIMATE

Memphis is in the "Hot Summers and Cool Winters" temperature belt. This makes it free from the extremes of heat and cold. The average temperature for the warmest month is 80.7° F., and that of the coolest month is 41.4° F., with a mean annual of 61.7° F. The highest temperatures reached in the last five years have ranged from 94° to 97° and the lowest from 14° to 26°, with the exception of one day in December, 1924, when a temperature of 6° was reached. During the last five years the thermometer has stood

at 90° or above on an average of only 36 days and at 32° or below on an average of only 34 days in each year. The average growing season is 228 days.. The temperature conditions are suitable for growing practically all fruits, vegetables, and crops that can be grown in the temperate zone. The table below shows the average climatic conditions for the past fifty-five years as given by the Weather Bureau Station of Memphis.

Mean Monthly Temperature and Rainfall for 50 years (1875-1925)

Temperature (Mean Annual 61.7° F.)

Jan.	41.4	Apr.	61.9	July	80.7	Oct.	62.9
Feb.	43.8	May	70.2	Aug.	79.6	Nov.	51.8
Mar.	52.6	June	78.0	Sept.	73.7	Dec.	43.5

Rainfall (Mean Annual 48.46 inches)

Jan.	4.86	Apr.	4.97	July	3.24	Oct.	2.77
Feb.	4.37	May	4.24	Aug.	3.40	Nov.	4.18
Mar.	5.33	June	3.89	Sept.	2.98	Dec.	4.31

Average Number of Days

Clear, 144. Partly Cloudy, 109. Cloudy, 112. .01 in. Rain, 113.

Average Annual Percentage of

Sunshine, 63%. Relative Humidity, 72%.

The average annual precipitation is 54.56 inches, 6.1 inches being in the form of snow. Snow falls on from five to ten days of the winter season, seldom exceeding two inches, and never deep enough to impede transportation. The amount and distribution of rainfall are excellent for the growing of almost all the temperate zone products. The rainfall, heaviest in the winter and spring and lightest in the fall, is as follows: winter 13.54 in., spring 13.54 in., summer 10.53 in., and fall 9.93 in. Memphis lies in the cyclonic wind belt. As these low pressure belts pass over the region, south winds, saturated with water vapor from the Gulf of Mexico, blowing into the "Low," give the region most of its rainfall. Most of the rain in the spring and summer comes in the thunder-shower type.

TRIBUTARY RESOURCES

The location of Memphis in the heart of the Mississippi valley makes cotton its most important resource. For the year 1925,

1,199,000 bales, or 12.81 per cent of the entire crop of the country, was drawn into the Memphis markets from the surrounding territory, making it the largest inland cotton market in the world. Of the entire amount of cotton raised in the United States, about 14 per cent is grown within a radius of one hundred miles from Memphis. A large percentage of this is cultivated and harvested by Negro labor on plantations and farms of smaller size while the planter resides in the city all or a part of the time.

FIG. 3. Where "Cotton is King"

The second largest resource of the region is the forests, for Memphis holds the most favorable location in the world's greatest hardwood producing area. The estimated amount of hardwood lumber passing thru the city annually is 2,000,000,000 board feet with a value of $100,000,000. Millions of feet are exported each year, reaching all parts of the United States and many foreign countries. Just south of the hardwood belt and still within a short haul of Memphis is the yellow or hard pine belt. This belt produces three-eighths of the lumber used in the United States,

a goodly amount of which is handled in the Memphis markets.

Coal, from the Eastern Interior coal fields of western Kentucky, reaches the city by way of the Ohio and Mississippi rivers with the exception of a five-mile haul from the mines to the Ohio. The average price of coal for domestic purposes in the thirty-eight leading cities of the country is $9.74 a ton. The price in Memphis is $7.84 a ton. High grade bituminous coal from three other fields reaches the city by fairly short hauls over the railroads.

Altho the Mississippi valley is noted principally for agriculture, its mineral production is of a rather wide range. High grade sandstone for building purposes, limestone and clay for the making of cement and bricks, and sand and gravel for concrete work are all at hand. Quartz sand suitable for glass-making is also present. Other minerals which add to the resources are red and brown iron ore, slate, lead, zinc, maganese, and bauxite.

TRANSPORTATION FACILITIES

Memphis, like almost all other inland cities in the early part of the nineteenth century, depended on inland waters for transportation. The city was laid out just eight years after the invention of the steamboat, and in a large measure grew up with and because of the new mode of transportation. It was in the first thirty years' growth of the young city, that the National Government appropriated large sums of money for the improvement of

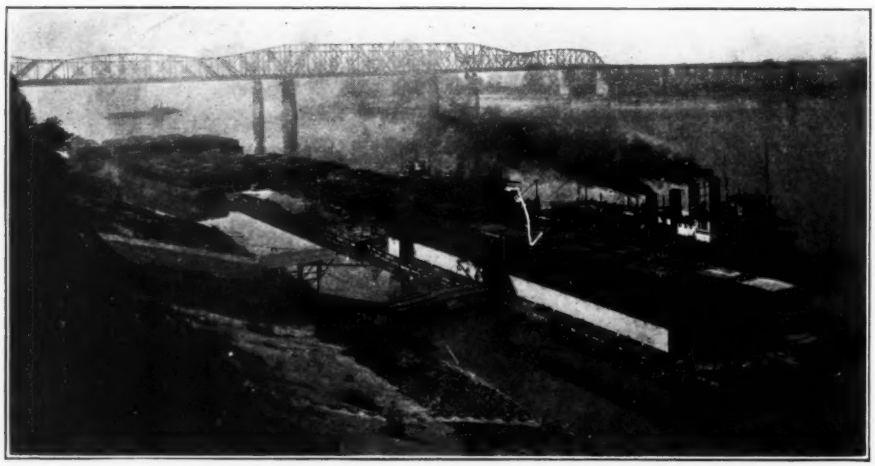

FIG. 4. $2,000,000 Municipal River and Rail Terminals

internal waterways. The Mississippi and the Ohio received generous portions of these appropriations. The mouth of Wolf River, where it flowed into the Mississippi at the upper end of the bluffs, afforded an excellent boat landing, and all steamboats passing up and down the river after 1820 made regular stops. The trade grew steadily and all foreign exports and imports of the city were carried on the Mississippi until the coming of the railroads

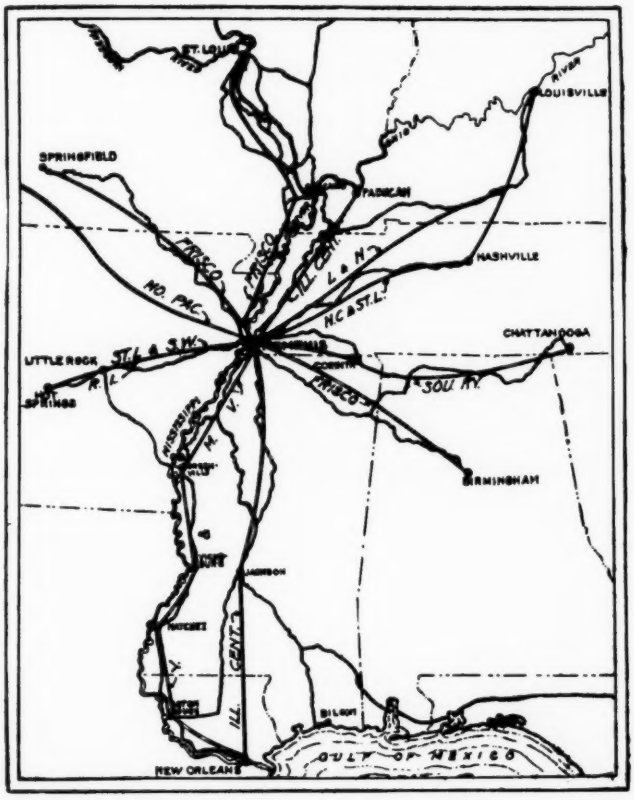

FIG. 5. Railroad and national highway map of the Mississippi Valley with Memphis at the hub. Four trunk railroad lines from the west and six from the east converge at the city. Five of the seven national highways crossing the Mississippi south of St. Louis cross on the Harahan bridge at Memphis.

in the last half of the century. Water transportation started on a decline in the sixties, owing to the fact that the method was slower than by rail and to the fact that the direction of the Mississippi was at a right angle to the main lines of traffic leading to the densely populated region along the Atlantic coast and Europe. In the last decade, however, there has been a revival in the shipping of bulky freight on the Mississippi. Numerous industrial plants of

the city have profited by the inauguration of the Federal Barge Line, the Mississippi-Warrior Service, which operates between St. Louis and New Orleans. Regular stops are made at Cairo, Memphis, and Vicksburg. Contracts have been signed by the United States Government to extend the line from St. Louis to Minneapolis and St. Paul, and from Cairo to Pittsburgh. The freight rates are 80 per cent of the all-rail rates. Water and rail competition have been one of the greatest factors in Memphis becoming the second largest iron and steel distributing center in the South.

There are no bridges across the Mississippi River between Memphis and the Gulf, a distance of about 500 miles. Memphis has two bridges for train service, one being double tracked and having wagon and automobile accommodations. About 175 miles up the stream at Cape Girardeau is the second place where a railroad bridge spans the river. These are the only ones south of St. Louis, about 800 miles from the Gulf. Ten trunk railroad lines enter Memphis, four from the west side of the river and six from the east side, forming a great transportation wheel with Memphis at the hub. Any route traversing the whole region passes thru the Memphis gateway. The water transportation on the Mississippi before 1857, when Memphis had its first rail connection with the Atlantic coast at Charleston, South Carolina, and the rail transportation since that date have been the greatest factors in the growth of the city.

As noted above, the Harahan bridge at Memphis is the only one south of St. Louis on which wagons and automobiles can cross. This accommodation has given to Memphis the same natural advantage in the National highway system that it holds as a rail center. Five of the National highways that cross the Mississippi south of St. Louis cross at Memphis on the Harahan bridge. These are the Bankhead, Lee, Ozark Trail, Mississippi Scenic, and Florida Mid-western. The other two cross by ferry on the lower Mississippi. Three other National highways, the Jefferson Davis, Memphis to Bristol, and the Delta, come into Memphis but do not cross the river.

COMMERCE AND INDUSTRY

The commercial and industrial growth of the city of Memphis is due largely to three leading factors: surrounding resources, geographic location as a distributing center for the South and Southwest, and a transportation system composed of the navigable

Mississippi and a net-work of railroads covering the central Mississippi valley, all converging at the city.

Table I shows Memphis with a distributing market of half a billion dollars. About one-third of the total is "King Cotton." Much of this is compressed and stored in the Federal compress plant, one of the largest in the world. . Ten per cent of the total amount is groceries and provisions. Tropical fruits from Central and South America reach the city by either an all-water haul or fast express from the Gulf coast. From the wholesale warehouses they are shipped out by both water and rail to all parts of the

FIG. 6. Federal Compress Plant. The world's largest cotton warehouse and compress terminal, operating approximately 250 acres of warehouses. All cotton is handled under cover. Average loading and unloading facilities for about 500 bales per hour.

surrounding country. The geographic location, together with its transportation facilities, has made Memphis the largest automobile distributing center in the South and second in iron and steel implements. Many manufacturers in the North and Northeast have found it an economic advantage to build large distributing warehouses in the city and ship directly from the factory to them by the car and train load. From these central warehouses, local shipments are sent out to points in the South and Southwest for consumption. The mule market is largely of the cotton mule type. They are distributed thruout the cotton section.

TABLE I. WHOLESALE DISTRIBUTION 1925 ($500,000,000)

Cotton	$158,500,000
Finished forests products	75,000,000
Groceries and provisions	53,000,000
Hardwood lumber	52,000,000
Automobiles, trucks, and accessories	40,000,000
Cottonseed and cottonseed products	37,500,000
Structural steel, railroad supplies, and boilers	20,000,000
Wholesale dry goods and notions	15,000,000
Drugs and allied products	15,000,000
Bags	12,000,000
Horses and mules	5,500,000
Miscellaneous	16,500,000

TABLE II. MANUFACTURED OUTPUT 1925 ($200,000,000)

Hardwood lumber and forest products	$100,000,000
Cottonseed products	40,000,000
Mixed feeds	15,000,000
Bags	12,000,000
Drugs and allied products	6,000,000
Steel and iron products	4,500,000
Flour, meal, and grits	2,500,000
Candies, syrups, beverages, and miscellaneous	20,000,000

From Table II it is seen that the industries are largely of two types, those depending upon the hardwood forests for raw material and those depending upon cotton for raw material. Fifty per cent of the total value of manufactured products is from the wood-working industry. In this type of industry is found a rather wide range of factories, composed of sawmills, planing mills, spoke, hub, and wheel establishments, screen, sash, and door plants, automobile bodies, etc.

The next type of industry based on value of output is cotton by-products. The manufactured value of cottonseed products for the year of 1925 was forty million dollars. The value of sweet feeds was fifteen million dollars, making Memphis the largest sweet feed manufacturing center in the United States. The combined cottonseed industries compose 27½ per cent of the annual output, and 77½ per cent of the total manufacturing industries of the city is supplied by the hardwood forests and cotton, the two major resources of the region. Because of good markets for certain finished products other industries have been located in the city, the raw materials for which come from other parts of the country.

FUTURE OUTLOOK

The general tendency of the rural population to congregate in commercial and industrial centers, the change in the direction of trade from an east to west to a north to south direction because of a difference in climate in the tropical and temperate zones, the recent revival of commerce on the Mississippi flowing in this direction, the building of the Panama Canal completing a water route from the headwaters of the Mississippi system to the western coast and points in the Pacific, and the promise of cheap and abundant hydroelectric power, together with its natural geographic location as a commercial, industrial and distributing center for the South and Southwest, all indicate that Memphis will continue to rank well among the leading cities of the New South.

MAP STUDY FOR A SCHOOL IN LONG ISLAND, NEW YORK*

IRENE J. CURNOW
Clark University

INTRODUCTORY REMARKS

This article is an attempt to show the possibility of bringing together human as well as physical aspects of local geography, the use of topographic maps, training in field observation, and yet make a simple and complete piece of work, practicable for any locality which has been made the subject of investigation by the Government. Most students are content to use the maps to identify and exemplify topographic features. A better grasp and greater skill are required to give a reasoned account of the area shown on the map; however, a written account, such as the one at the end of this article, is a development of map interpretation rather than an innovation in map usage.

THE MAP

As a type study the Camp Mills Quadrangle has been selected. This map, made up of the combined Oyster Bay and Hempstead Quadrangles, was published to show the location and surroundings of the aviation fields in this part of Long Island. This particular

* Camp Mills, Quadrangle, New York. 1:62,500. U.S.G.S., Washington, D.C.

map differs in size and shape from the normal sheet, in the addition of an unusually plain scale in meters drawn in the right hand margin, and in the placing of the conventional signs in the left margin instead of on the back of the map. Further, the usual in-

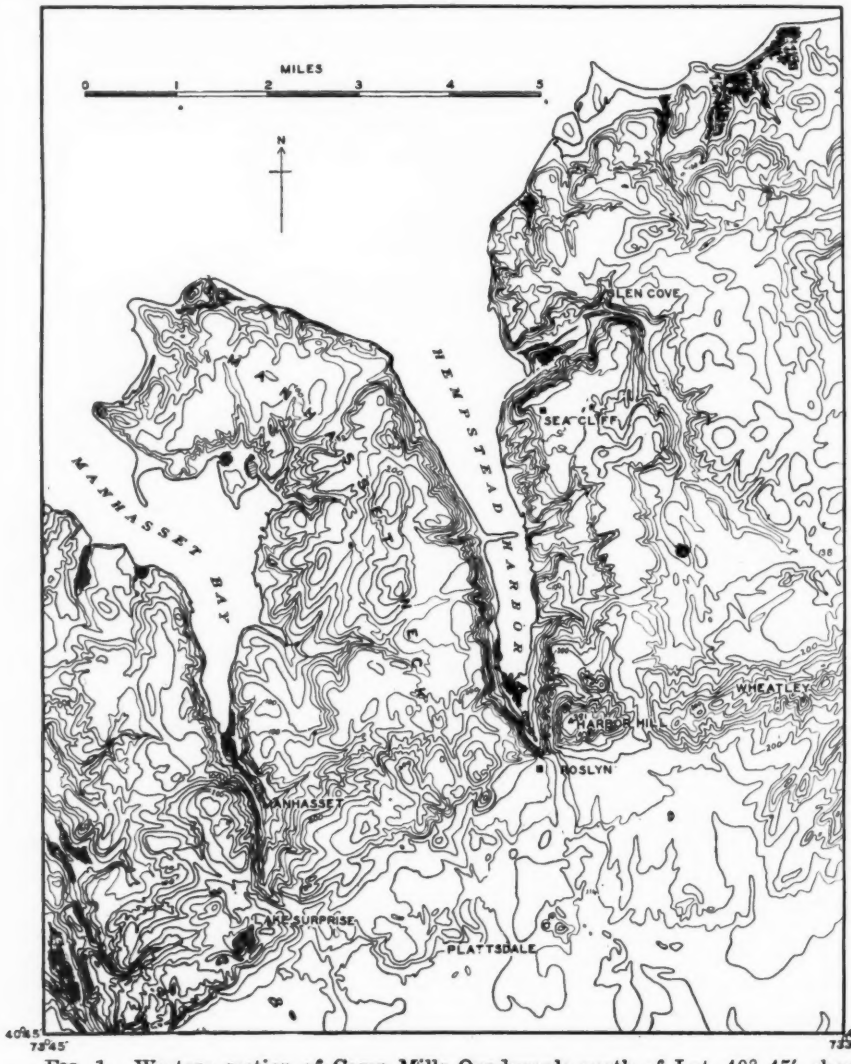

FIG. 1. Western section of Camp Mills Quadrangle north of Lat. 40° 45′, showing Northern Upland. Marsh areas shaded, contour interval 20 feet

formation printed on the back of sheets is here supplemented by statements giving facts relevant to the area portrayed.

The following series of questions elicit important facts from the student; at the same time they are the correct avenues by which even a trained map user approaches the unknown.

PRELIMINARY OBSERVATIONS ON THE MAP IN THE CLASSROOM

1. Where is the area located?
   The area is situated across the west end of Long Island, immediately to the east of Brooklyn, and, therefore, a short distance from the city of New York.
2. What is the scale of the map and the size of the area?
   The scale of the map is 1:62,500, or approximately one inch to one mile. The area is some 22 miles by 13 miles, or about 286 square miles in extent.
3. What is the contour interval?
   The difference in height between any adjacent contours on this sheet is 20 feet. Each contour is reckoned as so many feet above sea level.
4. What other important facts are told by the contours?
   In the north of the area the country is very hilly, and many slopes are steep.
   In the south, the country is extremely flat and the slopes are uniformly gentle. The total range of height is from sea level to 391 feet in Harbor Hill.
5. Can you see sufficient differences between different parts to suggest how the area might be divided into regions?
   The coastlines are different. The north coast is much indented, the south coast almost a straight line. Inland, the northern part is hilly, the south is a virtually level plain.
6. What important culture features are not shown on the map, but would be important in making observations on the ground?
   Woods, cultivated areas, and heaths are not shown. These are important in the scenery and in regard to settlement.
7. Draw a cross section across the sheet from N. to S., say along Long. 73°35′W.

PHYSICAL GEOGRAPHY

By careful questioning, it will be possible to lead the students to give suitable names to the regions suggested by the answer to question 5 (see above), and to lead them to discover and recognize the land forms in each region, while at the same time the teacher makes use of the opportunity to explain the origin of the various features. As a matter of arrangement it is advisable to have the notebook page, or the blackboard, divided into three columns: in the first column the names of the regions are inserted, in the sec-

ond column the land-forms, and in the third the comments in brief. In the following table the teacher's topics are given in column three, instead of the lengthy notes of the students.

Region	*Land Forms*	*Teacher's Topics*
I. The N. Coastline	Alternating peninsulas and inlets; inlets of two types, fiord and bay. Islands, tied-islands. Beaches, bluffs, spits and hooked spits, bar, deltas	The Ice Sheet, ice work, water modifications (silting). Wave and current work (filling and cutting)
II. The N. Hilly Upland	Terminal moraine. Kettle-holes, glacial lake. Ridge, scarp. Incoherent arrangement of topography and drainage. Marsh	Glaciated topography and drainage
III. Plain or Interior Plain	Outwash plain. Uniform gentle slope to south. Infantile drainage, streams sluggish. Lakes artificial and natural. Dams	"Outwash" plain. Drainage and Lakes
IV. S. Coastal Belt	Barrier beach. Dunes. Tidal runways, marshes. Lagoon. Spits. Island	1. Young coast (post-glacial) 2. Work of wind, waves, currents 3. Work of running water

HUMAN GEOGRAPHY

It is a matter of opinion whether cause and effect are sufficiently obvious to warrant the treatment of the human geography along with the physical or in a separate division. In this case, it is treated in a separate division.

Questions such as the following bring out the facts of major importance:

1. Is the area well populated?

   There are many towns and villages, and many roads and railways shown, indicating a thickly populated area.

2. Can you see any arrangements in the way the population is distributed?

   In the Northern Upland region the biggest towns are along the coast, and only villages are inland. On the plain, towns and villages are strung along two major lines of movement going east and west. The northern group fall roughly along the 100 ft. contour, the southern group about the 20

ft. contour, immediately to the landward of the marshy coast. There are many cross routes making a network of roads over the whole area. A road and a light railway cross the marshes in the south to Long Beach. The country-side is part of suburban New York.

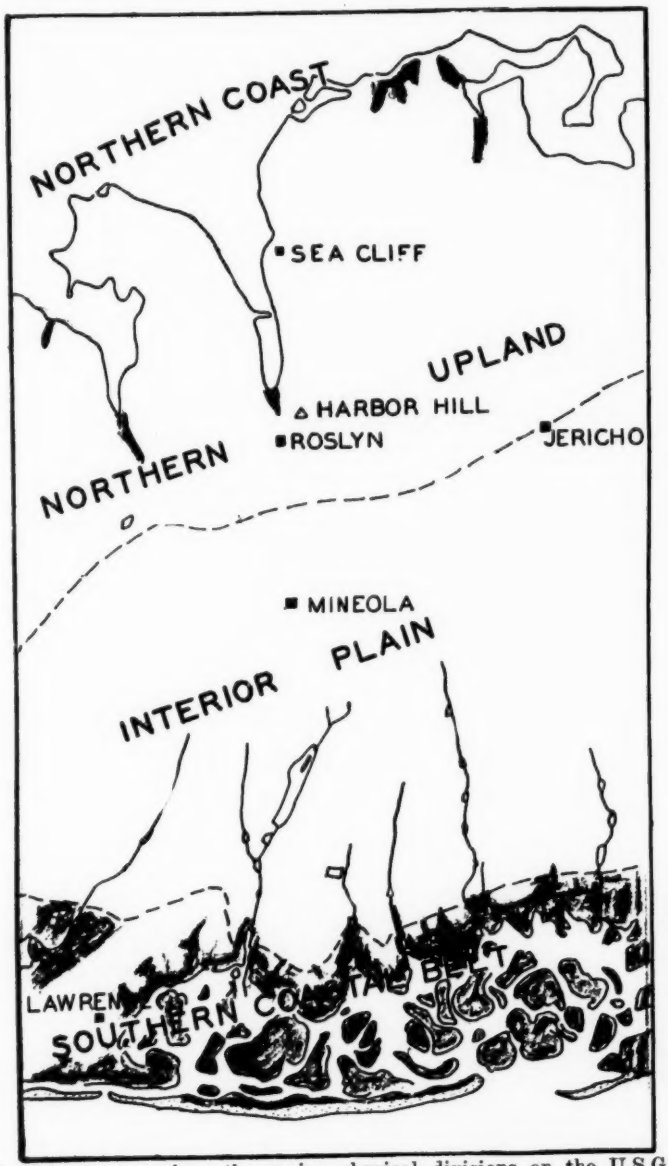

FIG. 2. Diagram to show the major physical divisions on the U.S.G.S. 1:62,500 Camp Mills Quadrangle. Marsh areas shaded, boundaries marked by dashes

3. Is there any other conspicuous feature of interest to the population?

   The many reservoirs are conspicuous features and suggest a plentiful rainfall and water supply.

4. Can you suggest any reasons for the location of the larger towns at particular points?
5. What are likely to be the main occupations in this suburban area?

It is not possible to obtain satisfactory replies to questions 4 and 5 from a mere examination of the map: but here is opportunity to discuss the importance of position and function in the growth of towns (of New York and its environs in particular) and to prepare the student for the field trip.

The Map in the Field

It is desirable to make field trips as the study progresses. On the excursions the student should identify the features discussed on the map in the class-room, and review with the teacher the physical history and any other relevant matters.

In practice this section of the work (with a little careful organization) gives an excellent opportunity for the introduction of another series of exercises, which lead to greater proficiency in the use of maps and in field work: exercises, good in themselves, but which, when treated purely theoretically, are somewhat dull. The following procedure is suggested.

When the field excursion is planned, a preparatory lesson should be given in which the teacher explains and demonstrates such things as orienting the map in the field, North point, the compass, even panoramic sketching; and the pupils can practice drawing conventional signs, etc.

If a brief résumé of this lesson, under the title of "Emergency Instructions," together with a set of questions (headed perhaps "Procedure in the Field"), a list of equipment necessary, and a map with the route marked on it, are supplied to each student the difficulties of coping with a large party are minimized. This formality appears to have a peculiar attraction for the independent person—especially one with training as a scout.

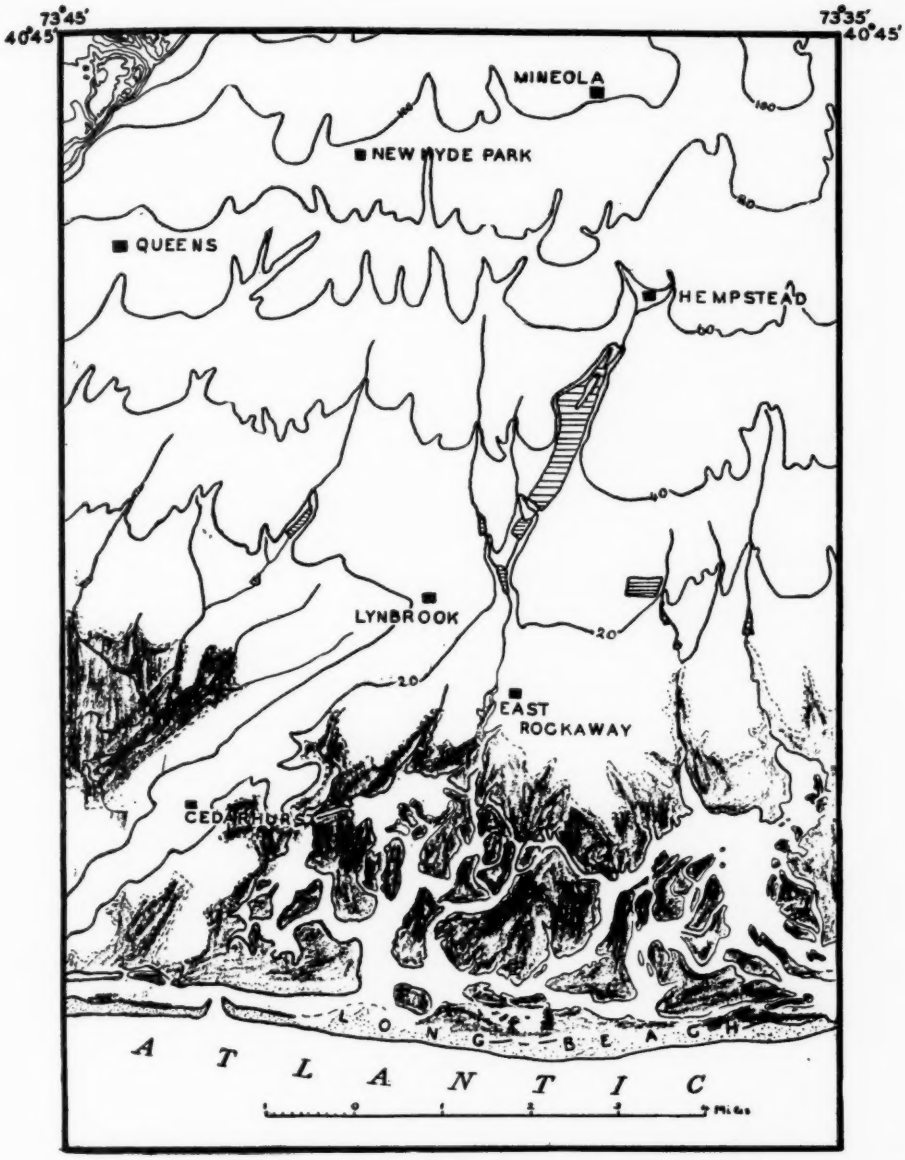

FIG. 3. Western section of Camp Mills Quadrangle south of Lat. 40° 45′, showing Interior Plain and Southern Coastal Belt (Simplified). Marsh areas shaded, contour interval 20 feet

PROCEDURE IN THE FIELD

It is unsatisfactory to attempt to draw up a standard set of questions for "Procedure in the field," as these vary with each excursion and must be framed to bring out the peculiar features

of the particular area to be visited. As a rule, the instructions should begin with details as to time and place of meeting, the expected hour of return, and then questions as to land forms, a comparison of slopes in the field with the arrangement of the contours on the map, insertion of details not shown on the map, notes as to velocity of streams, human habitations and occupations, types of roads, etc.

THE WRITTEN ACCOUNT

Finally, the student can be asked to bring together the observations on the map (tested and amplified by observations in the field) and the supplementary work of the teacher in a reasoned account of the area shown. A useful guiding principle in giving such a description is to work from the general to the particular. For example, the account might open with a general description of location of the area, significant facts in the physical history and then proceed to a general statement of the major regions. This introduction might be followed by a more detailed analysis region by region. The description should be accompanied by illustrations. The following section weaves together the facts of major importance common to all the accounts of the selected type study; but individual students will, of course, have other varied details of their own.

CAMP MILLS QUADRANGLE, NEW YORK[1]

The country shown on the sheet (some 286 square miles in extent) comprises a section across the west end of Long Island, lying immediately to the east of Brooklyn and Harlem. A small part of the Sound appears across the north of the sheet, and a narrow strip of sea on the south is marked as the Atlantic Ocean. The area falls between Lat. 40°35′ and 40°50′ N. and Long. 73°30′ and 73°35′W.

Long Island is a part of the Coastal Plain Region of the United States, and is located at the point where a change in the trend of the east coast takes place, and where the coastal plain has contracted to a narrow strip. A fact of special significance is that the island lies along the southernmost limit attained by the Great Ice Sheet. This ice sheet, advancing southward, reached out across the Sound and left its mark upon Long Island; a closer

[1] U.S.G.S. 1:62,500

examination of the features shows that, tho water work has been in progress for a very long time, yet the glacial incident accounts for the outstanding characteristics of four-fifths of the area under consideration. Only the narrow southern coastal belt, east of Cedarhurst, has a more recent origin and, therefore, escaped the effects of ice.

The country is very varied for so small a strip. The indented nature and the bluffs of the north coast present a striking contrast to the low even outline of the south: from the northern bays and islands the country rises inland to a bewildering medley of hum-

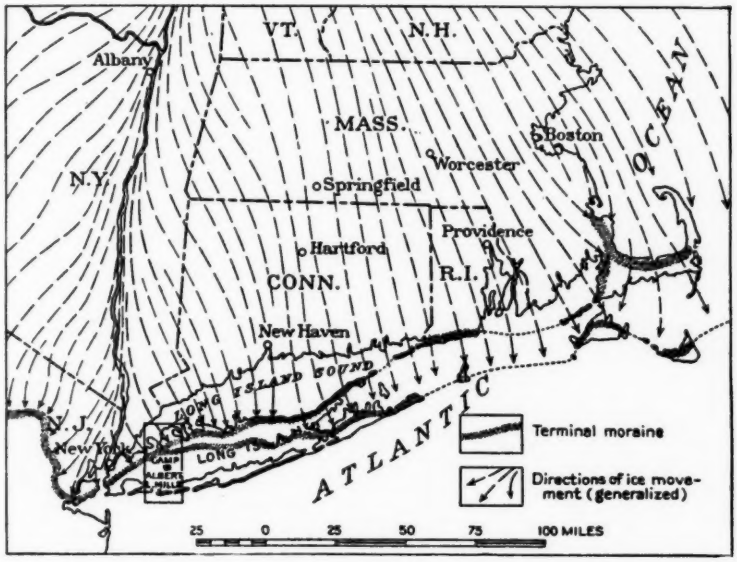

FIG. 4. Map of parts of New England, New York, and New Jersey showing extent, directions of movement, and terminal moraines of the last great ice sheet. Rectangle shows location of area here mapped. From U.S.G.S.

mocky hills, separated by odd incoherent depressions, some with streams, most without. Southward, the hills (except to the west) sink gently into a featureless plain, which, in its turn, subsides imperceptibly into tide-swept marshes, with but a narrow strip of duned beach, less than 20 feet in elevation, to mark the meeting place of island coast and the swell of the Atlantic.

In detail, it is most convenient to divide the area into four regions—The Northern Coast, the Northern Upland, the Interior Plain, and the Southern Coastal Belt. These four divisions seem justifiable tho it is recognized that the Northern Coast line and the

Northern Upland are intimately related. However, the work of wave and current appears to warrant the separation of coast and interior for discussion purposes.

The Northern Coast is a varied succession of deep inlets and projecting peninsulas, of steep bluffs and piled up beaches. It is varied because whereas ice has accounted for the major features, yet, ever since the ice retreated, running water, waves and currents have been busy obliterating the past. Unfortunately, the contours are not given on this map for Hempstead Harbor, but the surface features present characteristics suggestive of a fiord type of inlet. Hempstead Harbor, whatever its original form, is now characterized by long narrow precipitous sides, notched by ravines, with no graded tributary valleys nor overlapping spurs. This is typical of a glaciated coastline which has been submerged and drowned. Islands are also characteristic of a drowned coast: but here waves and currents, aided by the wind, have caught the loose shore materials, formed beaches and spits, and have tied up the islands to such an extent that Oyster Bay has now only one, instead of three, open water entrances. Oyster Bay is a different type of inlet from Hempstead Harbor. Small rivers are silting up the shoreline as they are forced to deposit their loads on reaching the sea, thus the combined action of rivers, waves and currents is seen to be making the land again upon the sea, but the sea appears to be the most powerful agent.

The Northern Upland is a region of undulating hills of no great elevation (see Harbor Hill district), of shallow depressions (Lake Surprise area), and of flat topped plateau stretches (Manhasset Neck), which have undergone considerable erosion by ice and running water. The underlying strata of this section are covered by a mantle of drift materials representing the accumulations of the terminal moraines deposited by the great ice sheets as they advanced, melted, and then disappeared to northward. The glacial origin of the major topographic features accounts for the general lack of coherence, the hummocky nature of the hills and scarp line, and for the kettleholes in the Lake Surprise neighborhood. The highest point, Harbor Hill, is a mere 391 feet above sea level. The glacial drift comprises loose unconsolidated materials, pervious gravels and sands and less pervious boulder clay.

The drainage is worth noting. Considerable dissection has taken place but the topography is in many localities irregular and

confused. The work of stream erosion is conspicuous in the region of Wheatley, and yet the streams are too small to be considered rivers; there are more empty than stream-filled valleys, and few valleys are truly V-shaped in section.

As a rule, intermittent streams and empty valleys are associated with aridity: but whether a stream is perennial or intermittent is not only a question of climate but also a matter of topography. The relationship of valley depression and ground water level determines the flow of streams. In Long Island rainfall is ample, yet observations show that the valleys in this upland

FIG. 5. Northern Coast, Long Island, N.Y., showing even skyline, bluff and boulders. Photo by W. C. Alden

region are mostly occupied by perennial streams which can be traced up from tide level to a point some miles inland, above which the streams disappear, tho the valley is continued headward. The explanation of this anomaly appears to be that the points where the streams are marked as perennial coincide with the lower ground water level. However, ground water level is not constant: and thus the upper parts of the valleys are periodically occupied. Above the maximum ground water level the valleys will be drained at times when the surface run off gives rise to freshets.

Southward the upland merges into an outwash plain. This lowland is exceptionally level, almost featureless, with a gentle slope to the Atlantic. The average fall is between 10 feet and 20

feet per mile. The lobate nature of the contours, reflecting the fan like distribution of the morainic outwash, is conspicuous on the northern side of the plain, but fades out southward. The present drainage is extremely youthful. A few streams rise at various points on the plain, as a rule in springs, and sluggishly pass by fairly straight courses to the sea. Most of the streams have been dammed back to make reservoirs to supply the towns and villages.

The Southern Coastal Belt is a broad belt of lowland, below or barely above sea level, except to the west where a low ridge, extending from Lynbrook to Lawrence, rises to between 20 and 40 feet in elevation. This represents a remnant of old glacial gravels and clays—a relic of an early ice visitation. The Southern

FIG. 6. Long Island, N.Y. View of Harbor Hill moraine southwest of Lake Surprise from the outwash plain north of New Hyde Park. Photo by W. C. Alden

Coastal Belt is a coastal plain in the making. Much of the rainfall on the porous outwash plain finds its way underground, and near where the plain reaches sea level the seepage wells up. In process of time the surface streams, together with the underground supplies, have given rise to a wide area of fresh water marsh meadow land. Seaward the fresh water becomes brackish and finally merges into true salt water tidal creeks and runways. The waves and currents, instead of scouring out the soft muds and sands, have brought more loose materials and even built up a barrier beach: here the winds have piled the light sands into dunes. This barrier beach intercepts the swell of the ocean, checks the rush of the tides, and thus the sea is seen to be aiding and abetting the streams in lengthening their courses seaward; gradually the tidal creeks and runways and marshes will be drained, the islands will disappear, and the land will here have won another victory over the sea.

As for the human geography, the area is adjacent to Brooklyn and Harlem, and thus is but a part of a vast suburban area of New York City. The population is dense, well distributed, and rapidly increasing. A Garden City has already been built which extends from Mineola to Hempstead.

A network of roads connects the centers of population, and a number of railways link up the major towns and New York. In the northern section, the larger towns are situated along the coast, and only small centers are marked in the interior. These coast towns, situated on the wooded heights and slopes overlooking the Sound, are favorite resorts, and in addition offer certain harbor facilities. The interior is rather a region of estates and park-lands with a relatively sparser and more evenly distributed population. On the outwash plain the larger towns are strung out along two major lines of movement running east and west. These lines follow very roughly the 100 ft. contour on the northern flank, and the 20 ft. contour on the south—the one below the scarp and hills, the other above the marsh. This section is a typical suburban area. The wood lots are being cleared to make way for the building sites; some fields are being cultivated. It is likely that as the population increases truck gardening will be encouraged more and more. The aviation fields were laid out as a war measure to the east of Mineola, where the level, drained and open spaces make good landings possible. The southern group of towns, lying immediately landward of the lagoon and marsh strip, offer very poor harbor facilities; but the barrier beach, facing south, is sufficiently attractive for bathers and others, and so a road and light rails have been carried across the marshy islands and creeks to the sandy shore along the warm and shallow waters of the Atlantic.

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LESSONS BASED ON THE APPENDIX AND INDEX OF THE ADVANCED GEOGRAPHY TEXTBOOK

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SELECTED LISTS OF CITIES IN THE UNITED STATES

The reading of the advanced textbook in geography as a book of travel convinced me that a thoro study of the book should be made by the teacher before assigning work to a class. Without this study she cannot use all of the material of the textbook with the best possible results.

As a student and teacher of geography it seemed to me that I should have more definite knowledge of the large cities in the various states. Accordingly the list in the Appendix, "A Selected List of Important Cities in the United States," was found. This list was checked by states and certain round numbers of population were kept in mind such as 10,000, 15,000, 20,000, 25,000, 40,000, 50,000, 75,000, 100,000. Then a comparison of the location and importance of the cities of about the same size in the various states was made. This study may be used to reinforce work on cities under the topic, "A Geographic Principle Developed and Applied." The principle used may be, "Population and wealth tend to collect wherever there is a break in transportation."

From this study of cities in the appendix I gained information regarding the United States which will help me to read certain current articles more intelligently and which will be of value to me as a student and teacher. Perhaps some examples will be helpful. An article on potash in a current magazine was being read as preparation for an agricultural project. The name of Wichita was found in the reading. We had seen the word before but knew nothing of it beyond its location. The text of our geography merely mentioned it. We turned to the appendix and found the population of this city in 1910 and in 1920. This comparison showed an increase of about twenty thousand in ten years. From this fact, learned in the appendix, we knew that Wichita had grown rapidly in recent years. This led us to believe that it was prosperous, progressive, and up-to-date. If a recent study of the list, "Selected Cities of the United States" had not been made, the appendix would not have been consulted for information which we

could not find elsewhere in the textbook. While studying the cities of Connecticut a pupil remarked that Meriden had not kept up with the growth of the times. He said a visitor from that city had given him this fact. Some discussion followed, and the suggestion was made to the class that a pupil look up Meriden in the appendix. Sure enough Meriden had only a small gain to its credit, about 2,000, while Hartford had a gain of nearly 40,000. Our list had helped us to verify a statement which was of much interest to a class living so near Meriden who were interested in the growth of the industrial cities of their state. The next step, an important one, was to find reasons for the rapid growth of Hartford and for the slower growth of Meriden.

LARGEST CITIES IN THE WORLD

The list of the "Twenty Largest Cities in the World," offers a similar suggestion for work in comparing the location and importance of the principle cities of the various countries of the world. In the appendix is found, "Foreign Cities Most of Which Are Mentioned in the Text." This list is of value in locating cities not often mentioned in current readings and therefore not familiar even, as Limoges, Manaos, Trebizond, and Santos. This list also gives the population, which is a convenient reference when a question regarding the size of any of these cities arises, or when the reason is sought why one of them is located exactly where it is.

LIST OF LARGE RIVERS

"Some of the Largest Rivers of the World" is a title in the appendix which includes the length in miles, basin area, and the ocean into which each flows. This list contains material of value in studying drainage and industries of various countries. Rivers have played an important part in developing regions and their cities, and this information, given so conveniently in the appendix, must often be required by the student and teacher of geography.

LARGE CITIES IN THE UNITED STATES

Few topics in geography hold more of interest to the student than the growth of cities. In the appendix is a list of the largest cities of the United States with their growth in population from 1800, thru the years 1830, 1890, 1900, 1910, and 1920. This list

offers a convenient nucleus for a most profitable study of the location and growth of these cities. The question of just why marked growth is noticeable at the periods listed should be considered. This consideration will richly repay the student in facts of intense human interest.

LIST OF COUNTRIES

Many students are rather shy of becoming acquainted with statistics. Too many statistics are deadening information no doubt. Nevertheless, certain facts require statistical form for convenience of access and comparison. The appendix gives a comprehensive list entitled, "Continents and Principle Countries, Colonies, etc." As I studied this list I felt that my ideas of the area of many divisions of my own country and of other countries had been rather vague. In my work as student and teacher many facts will be of clearer meaning to me after the study of this statistical table of areas and population.

LARGE LAKES

The appendix also includes a list of large lakes of the world, the races of mankind, with the number of each, and a table entitled "Elevations of Some Plateaus and Mountain Peaks." A study of these lists for comparisons of size and for location would serve as valuable review exercises for the student of geography who wishes to increase his knowledge of these lakes, elevations and races.

Just why many teachers avoid using the appendix with their classes is difficult to understand after one has become awakened to its value and possibilities for working out most interesting exercises and to its convenient form for rapid reference. Probably the answer to this "why" lies in the word "awakened." Many of us have not been thoroly awakened to the value of the appendix when first using the geography textbook.

REVIEW WORK WITH THE INDEX

Altho I tried, as a teacher of grammar school pupils, to help my classes to acquire a working knowledge of the index and Pronouncing Vocabulary in the geography textbook, I once would not have thought it possible to plan interesting exercises from the index. Now I am confident that it can be done for a class. As high school students, girls and boys of the grammar grades will have to look up references many times without help from an in-

structor. Therefore these pupils should have more experience in this work while in grammar school. The index offers opportunities for this work.

For review work interesting discussions on agricultural products can be prepared from references listed in the index. Barely is found to be of importance in sixteen countries—a fact that is learned from a moment's study of this subject in the index. Much time would be required to find this out without this list. In similar manner other agricultural products, corn, oats, potatoes, cotton, and sugar, and all other important foods and clothing materials are listed.

Topics from these lists in the index may be assigned to various members of grammar grade classes for preparation. This method of assigning the work is much more profitable for the pupils than the practice of giving a topic with certain pages for study. It develops the pupils' ability to use reference material independently. Fishing, mining, and lumbering may be assigned from the index for study and discussion.

The index is also valuable in looking up topics found in reading and studying for further information. Rivers, lakes, seas, cities, and countries are topics which may be located also for study.

PRONUNCIATION

The pronouncing of proper names many times seems difficult for the grammar grade pupils. The index, with its pronouncing vocabulary, offers valuable assistance. Early in the work of the advanced textbook definite exercises in using the vocabulary to aid in pronouncing new or difficult words should be planned. To help the pupil to acquire the pronouncing-vocabulary habit, definite assignments may be given for a time. If the work is on the Western States, one pupil may be required to report the correct pronunciation of Cheyenne, Lassen, and Pueblo. Other proper names may be reported by others of the class. Later in the year this work may be required from all of the class without a definite assignment. As students of geography they may be expected to look up the pronunciation of all names about which they feel any uncertainty.

CONCLUSION

In addition to the plans which I have found pleasure in making for my classes, I know that my study of the index has given me a

familiarity with the value of its use which will lead me to turn to it for help more often than in the past in my work as a student and teacher of geography.

Since all of a teacher's studying should be done with one purpose clearly in mind—"To increase and to enrich her own ability to help girls and boys to get more that is worth while from their study," I am sure that some time devoted to an acquaintance with the appendix and index of our geography textbooks would result in good for our classes.

BLUFFS*

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INTRODUCTION

Bluff is a word used popularly, but ambiguously, to designate a steep, almost perpendicular slope facing a river, lake or sea. Generally the reference is to such a slope developed in unconsolidated material. However, some authors use the word even more broadly to designate similar declivities in consolidated rock. Thus Capt. W. Glazier (11, p. 23) writes of a "limestone bluff" at Prairie du Chien, Wisconsin, and at Maiden Rock, Minnesota. But this usage is exceptional; rock declivities are ordinarily referred to as cliffs.

A search of geographic literature shows that the word bluff is most frequently and, it would seem, most pertinently used in referring to a particular occurrence of the topographic form existing along the Mississippi River. Despite this indicated restriction in application to a specific form, authors of textbooks on physiography and geology give varying definitions or explanations of the term. In fact many of these authors employ the word in a way that indicates that they are at a loss in regard to its specific significance. Others avoid "bluff" altogether presumably because of the ambiguity that exists regarding its meaning. The following quotations are illustrations of the textbook usage.

Pirsson and Schuchert (22, p. 67). "There frequently occur in river valleys, long narrow stretches of flat nearly level land, often on both sides of the river. Back

* The author is indebted to Dr. O. D. von Engeln of Cornell University for assistance and suggestions in the preparation of this paper.

of them away from the stream, may rise the ascending slopes of the valley, next to the river they[1] may descend to the present river plain steeply or even in bold bluffs.'' It appears that what these authors mean to say is: In places the river cuts into the valley wall making a steep declivity of the lower portion of the valley slope.

W. M. Davis and W. H. Snyder (6, p. 74). ''Reefs retreat when more sand is lost than gained, their dune sands slowly blowing back into the lagoon or upon the lagoon marsh. At last the lagoon disappears and the main land is directly attacked and slowly cut back in a long, low bluff. Examples are Long Branch, New Jersey, and the south shore of Lake Erie west of Buffalo.'' Here, obviously, the word bluff is used to designate low, but steep, wave-cliffed shore lines.

FIG. 1. Valley-wall bluff at Hudson, Louisiana. Photo by G. D. Harris

David Page (20). Bluffs—''High banks presenting a precipitous front to the sea or river.''

I. C. Russel (23, p. 267). ''The conspicuous bluffs of light colored clay-like material termed loess, bordering the flood plain in many places mark the borders of an inner valley, excavated in the material which formerly occupied the older and broader valley from side to side.''

R. S. Tarr and L. Martin. (25, p. 51). ''The meander belt of a flood plain is commonly bordered by a bluff against which the river swings from time to time. This bluff is usually the old valley side but it has been trimmed by the cutting of the river as the meander belt swings over to it.''

C. R. Dryer (8, p. 74). ''The flood plain of the Mississippi is bounded on the east by clay bluffs, 100 to 300 feet thick. There are also bluffs on the west side as far down as Red River but they are not so prominent.''

G. J. Miller (19, p. 16). ''Valley is the land between bluffs on each side of the river and over which the river meanders.''

[1] Evidently referring to the valley slopes

This study was made for the purpose of finding out whether the content and use of the word bluff was such as would permit of its definition in precise terms. It was also sought to determine whether its use in physiographic senses ought to be restricted to a particular phenomenon. If such a restriction is warranted then the word bluff should carry a genetic significance and should refer to a specific type of land form.

ETYMOLOGY OF THE WORD "BLUFF"

Dictionary and Encyclopedia Definitions and Citations of Usage

Century. a. & n. Rising abruptly or boldly as a high bank on a shore of a sea, river or lake. Presenting a bold nearly perpendicular front as a coast line or range of low hills. "The Rock Tabra, a bluff peninsular prominence that juts out from the bottom of the cliff." Atkins, Voyage to Guinea, p. 102.

First used in American Colonies in the Eighteenth Century—A hill, bank or headland, with a steep broad face, a high bank presenting a steep or nearly perpendicular front especially on a shore of a lake, sea or river; also a steep rise between the bottomland and the higher tableland.

"Beach, bluff and wave adieu." *Whittier.*

"Round the hills, from bluff to bluff." *Tennyson,* Golden Year.

Webster. n. A high steep bank as by a river or sea or beside a ravine or plain, a cliff with a broad face. "Its banks if not really steep had a bluff and precipitous aspect." *Falconer.*

New English-Oxford. Dutch origin, adj., presenting a broad almost perpendicular front, rather rounded than cliffy in outline. *Smyth,* Sailors' Word Book.

1658 R. France, North Mem. p. 165: "The pleasant banks of Illay . . . . where . . . . the water runs most on the level and the banks are very blough."

1769 Falconer, Marine Dict.: "Cote en ecore—A bluff or bold shore."

1772 Cook, Voyages: "An elevated bluff point which we call Rock Point."

1791 Cowper, Odyss. 5, p. 486: "The rude coast a headland bluff presented."

1849 Murchison, Siluria, 7, p. 129: "This rock frequently forms bluff cliffs."

1872 Dana, Corals, 2, p. 174: "Every variety of slope from the gradually inclined bed of corals to the bluff declivity."

1737 Wesley, Works, p. 163: "Savannah stands on a flat bluff, so they term any high land hanging over a creek or river."

1776 McIntosh, L., Spark's Corr. Am. Rev., 1853, p. 150: "A bluff or sand hill thirty feet high or more above the water."

1837 Irving, W., Capt. Bonneville, 1849, p. 45: "The wild and picturesque bluffs in the neighborhood of his lonely grave."

1842 Tennyson, A., Golden Year, p. 76: "I heard a great echo flap and buffet round the hills from bluff to bluff."

1865 Geikie, A., Scenery and Geol. of Scotland, p. 188: "Bold bluffs that mark the limits of an ancient shore."

Funk and Wagnalls. n. A cliff or hill with a broad steep face, a bold steep headland.

Brittanicca. "Uncertain origin possibly Dutch from blaf meaning broad. A cliff or shore presenting a bold or nearly perpendicular front."

Americana. "American origin synonymous with cliffs. Examples the banks of loam on the east side of the Mississippi River below the mouth of the Ohio River

also along the south shore of Lake Superior near Pictured Rocks, where the bluffs are cut in a loose blowing sand."

Universal. "A high bank or cliff presenting a steep or abrupt front toward the sea, lake or river. Examples—on banks of Mississippi and western rivers."

The New International does not list bluff.

If, therefore, the noun bluff is to be used without further restrictions than those imposed by the dictionary and encyclopedia definitions, it will be in a class with such terms as eminence, hill and declivity. But an eminence or hill may be a monadnock, a horn, a peak or an arrete. Further there are declivities due to faulting; cliffs due to wave action; escarpments due to weathering; and the steep sides of young stream valleys.

Suggestive Geographic Usage

In the quotations from the literature given in the introductory section there is expressed a fairly uniform conception of the shape of a bluff. Topographically a bluff is rounded rather than cliffy, but nevertheless is in some degree precipitous. Three distinct origins are defined or indicated. If each of these origins is accepted as competent the term bluff should be accompanied in geographic papers by a qualifying adjective suggesting its genesis. Accordingly, bluffs may be classified as: (1) valley-wall bluffs, (2) loessial bluffs, and (3) coastal bluffs.

The Valley-Wall Bluff

A stream may be engaged in the process of aggrading its valley floor by flood-plain deposits. On such deposit the course of the river is meandering. The size of the meanders is determined partly by the volume of the stream and partly by the slope. The larger streams may meander across the entire width of their flood-plains. The stream then in places impinges on the valley-wall and undercuts it by lateral erosion. In other words the lateral sweep of a river with large volume and deep current may suffice to erode a wider valley while at the same time it is incompetent to transport its sediment load and consequently aggrades its bed. Valley widening by lateral erosion does not cease when aggradation of the valley floor begins. Thus valley-wall bluffs are developed. The bluffs on the Mississippi at Prairie du Chien, Wisconsin, and at Maiden Rock, Minnesota, are valley-wall bluffs. The definition by Tarr and Martin (25, p. 51) quoted above, is quite exactly in

accord with this development. Davis apparently appreciated this possibility for he wrote, (6, p. 224) "Whenever a meandering river swings against its valley-walls they will be slowly consumed."

THE LOESSIAL BLUFF

The flood-plain deposit in a previously excavated valley may be covered by a desposit of either wind- or water-deposited loess. Loess has the ability to preserve a steep slope when cut into and is always thickest on the side of the river toward which the pre-

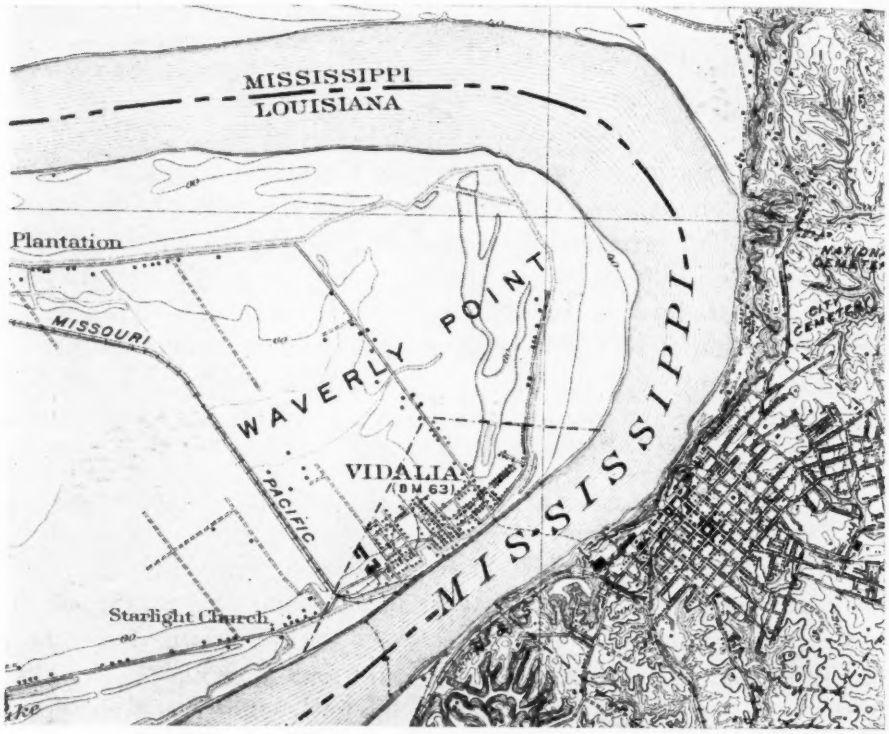

FIG. 2. Valley-wall bluff at Natchez. From Natchez Quadrangle, Mississippi-Louisiana. Scale 1:62, 500

vailing winds bringing the loessial material are blowing. The meandering stream undercuts these deposits of loess and a bluff develops. Loessial bluffs unlike the valley-wall bluffs are not found on the true valley side but form the boundaries of an inner valley developed in such valley-fill. This fits to the definition by Russell (23, p. 267).

The bluffs of the Mississippi at Vicksburg and on the Rhine River are the best known examples of this type of bluff.

COASTAL BLUFF

Reefs or off-shores and bars are built at an appropriate distance from a shore by the effect of wave action on a shallow sea bottom. If more sediment is lost than is gained the reefs retreat toward the land and in time the sand from the reef fills the lagoon and even advances on the sand dunes of the shore. As the reef retreats still further the waves directly attack the unconsolidated coast land and bluffs are developed presenting a steep face to the sea. This is the concept of Davis and Snyder (6, p. 353).

ILLUSTRATIONS

The two illustrations, Figure 1 a photograph made at Port Hudson, Louisiana, and Figure 2 a section of the Natchez, Mississippi, topographic sheet show the valley-wall bluff type as developed along the Mississippi River. Scanning of the bibliographical list appended will properly convey the impression that bluff is most commonly used along the course of the Mississippi River.

CONCLUSION

This study suggests that careful conning of the literature will often serve to clear up vague and incidental mentions of geographic phenomena as these occur in a single publication, textbook or paper. As a result of such search it may also be possible to indicate, as here, restricted and specific use of the terms involved to promote better understanding of what is described. Such research may to advantage be pursued by high school pupils even if the school has only a limited geographic library. Dictionaries, an encyclopedia, a variety of texts other than the one used as a basic text by the class will suffice for such projects. Suggested other pairs of terms of some ambiguity in physical geography are avalanche, landslide; caldera, crater; revived, rejuvenated; pass and col; jungle land and rain forest.

There follows an incomplete bibliography of the books and papers consulted in the course of this work. All those which are referred to in the preceding paragraphs are included and enough others to give the reader an idea of the kind of publications in which the term is used.

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GEOGRAPHY GAMES*

RESPONSE

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This game, very much like "Classification" is an adaptation of the well-known "Bird, Beast, or Fish" ("Fire, Air, or Water") play.

The pupils are seated in a circle with one of their number standing in the center to act as the initial examiner. The geography class having just begun the study of Europe, the teacher announces a drill on the countries and capitals of that continent to be conducted in the following manner: The examiner unexpectedly faces toward one of the pupils seated in the circle, proclaims the name of a country, says "Hungary," with a forceful gesture and proceeds to count to ten (five) in a rapid voice; the pupil confronted must answer "Budapest" before the examiner arrives at "ten" or must yield his chair, step to the center of the ring and assume the rôle of examiner.

If the class is studying the geography of the United States, the game may be varied by having the examiner pronounce the name of a state and the examinee respond with the name of the section or region of the country in which it is located, or the examiner may pronounce the name of a product of one class or another and the examinee respond with the name of a leading state, region or city in its production or vice versa.

The idea of "Classification" may also be applied by having the examiner pronounce the name of a mountain, river, or city and the examinee respond by classifying it.

Whenever played, the game is sure to arouse keen competition and much merriment, thus rendering the drill interesting as well as entertaining. The training afforded the principals, when projected suddenly into the limelight, in the co-ordination of quick thinking and rapid articulation is another incentive for employing this method of popularizing place geography.

(Southern Hemisphere Land and Water Features)

1. Cape
2. River
3. Mountain
4. Falls
5. Mountain
6. Channel
7. Mountain
8. River
9. Peninsula
10. Gulf
11. Bay
12. Desert
13. Island
14. Lake
15. Desert
16. Range
17. Mountain
18. Lake
19. Strait
20. Range
21. Reef
22. River
23. River
24. Plateau
25. Plain

* These two games are from Circular 3, Oklahoma State Council of Geography Teachers.

GEOGRAPHICAL SERIES

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A review may often be conducted in an interesting way thru Geographical Series, that is, a chain of names whose initial letter is the last one of the preceding name.

For example, suppose a review of the cities, mountains and rivers of Oklahoma is to be held. The pupils may be divided into groups and a pupil allowed to answer alternately from each group or the pupil with the readiest answer from the class as a whole allowed to answer. The first pupil may name "Oklahoma City," then the second pupil gives a name starting with "y" (the last letter of "Oklahoma City"), say "Yale," the third pupil might name "Enid," the fourth "Durant," the fifth "Tishomingo," etc. Each name may be used only once. The same idea might be applied to a review of a country or grand division.

Games and Devices

It is probable that hundreds of teachers have worked out hundreds of geography games, puzzles, devices for use of pictures, maps, diagrams, lantern slides, etc., that would be of great assistance to others. Wil you cooperate by writing out a clear description of one or a dozen that you have developed and send to the *Editor* of the *Journal?* Send us any teacher-aid and interest-stimulator that you have devised. Make your description as brief as is consistent with clearness. We will undertake to pass a large number of these devices on as an aid to others. Success depends upon your assistance. Write us at once.

GEOGRAPHICAL PUBLICATIONS

Harlan H. Barrows, Edith P. Parker, and Margaret G. Parker. **Europe and Asia.** 280 pages, 251 illustrations. Silver, Burdett and Company, New York, 1927.

We know well that a majority of our teachers are inexperienced and that only a small percentage of these are graduates of our teacher training institutions. It is not possible for these institutions, with their crowded curriculums, to graduate prospective teachers fully equipped with teaching technique, trained judgment, and subject matter for the teaching in any of the several grades; the graduate must be ready to teach. Much aid must be given in the teaching field. The superintendent, the principal, if possible supervisors too, should be there to help but again the load is too heavy for each individual teacher to receive much help. The teacher's greatest aid should be the textbook. It is worth while then to examine a new geography text with these questions in mind:

1. Does it aid the teacher to teach well organized lessons?
2. Does it present a selection of subject matter in keeping with important world events?
3. Is it accurate?

Other questions have been formulated but most of them are closely related to the three offered here.

Europe and Asia is the third of a new series. This series is organized so as to give a separate, complete textbook for each grade, which is an important step forward

in the business of producing geography texts for the grades. This series also meets the present generally accepted plan for textbooks by breaking completely with the spiral and repetition methods. Another commendable fact is that this series is a true text rather than a combination atlas and encyclopedia.

As regards question one, this particular book does aid the teacher in presenting well organized lessons; from the standpoint of the teacher training instructor, eager to develop technique, it makes it almost too easy. The experienced teacher would not find the text as elastic as she could wish, largely the result of the non-encyclopedic nature of the text, and the organization of material. This statement points to the next question.

In the main the book does present textual material in keeping with the problems and interests of the day. It seems to the writer that the most serious weakness of the book is the artificial groupings of the smaller or seemingly less consequent countries of which "Italy and its landlocked neighbors" is the most unfortunate. These groupings are, no doubt, the result of minimizing material to help the teacher. If the grouping is necessary it should follow a more natural order. It is this minimizing of subject matter, particularly in reference to the smaller countries, which would handicap a teacher interested in developing problems related to current events.

May not accuracy be a matter of selection and handling of material as well as exactness of facts? There is little to question about the bare facts of this text but the writer feels that the method of presentation of some of the material is likely to lead to inaccurate conceptions on the part of teachers and pupils. In this, also, the chief weaknesses are the artificial groupings of countries and the minimizing of material. It is true that rubber is shipped in the liquid form but not as pure latex, as it is first treated chemically, a fact the average teacher needs to be told.

Two weaknesses of this text which come out when the book is in the hands of the child are the constant reference to other books of the series and the inclusion of thought questions in the midst of expositional or descriptive material. The insistant reference to other books of the series is most annoying to children who have not used the earlier books of the series and makes the teacher feel that the set is being forced on the school. The asking of thought questions in the midst of paragraphs tends to restrict the teacher to the author's method. The use of the rhetorical question, as employed in this book, is admissable, indeed desirable, but not so this use of the thought question if the book is to be a tool in the hands of a real teacher rather than a hearer of a textbook.

It is to be hoped that in later editions of this book the index will be more complete and more indicative. For instance, there are five references for Liverpool, the fourth is the one that gives the important details but only a search thru the textbook reveals this.

One of the finest features of the book, true of all of the series as yet published, is the carefully selected, limited list of place names appearing on the maps and in the text.

AMY WARE

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C. E. P. Brooks. **Climate Through the Ages.** 439 pp., 39 maps and curves, bibliography. R. V. Coleman, N.Y. 1927.

A valuable study of the climatic factors and their variations by the director of the British Meteorological Office. Dr. Brooks has made several notable contributions to this general subject in recent years. His "Evolution of Climate" (London,

1922, 1925) is perhaps the best exposition of post-glacial climatic changes. The present book is based on the previous work of numerous other investigations, but contains several significant additions. Dr. Brooks is convinced that the post-glacial climatic changes are due to solar changes, but believes that most of the changes of geological duration are due to changes in the earth's geography. He concludes, however, that Wegener's hypothesis of the shifting of the continents is disproved by known facts as to the climate of the geologic past.

Indiana University S. S. VISHER

Philip A. Knowlton. **Introduction to World Geography.** 298 pp., 262 maps, photos, and sketches, 5 full page color illustrations. The Macmillan Co., N.Y. 1927.

The author states that this book is to be used as the first textbook in geography, except in those schools where there is a textbook in the third grade. It may or may not follow *First Lessons in Geography* by the same author. The first few pages explain what the book is about. Then follow pages on the home region, how to use maps, and early and recent explorations. After this comes the greater part of the book which deals with type studies thruout the world. In presenting a type, one or more regions are usually discussed in the United States, then regions in other parts of the world are studied. There are maps of the world, the United States, and Europe, which show by numbers some of the regions discussed.

The book treats world geography rather thoroly. A very large number of places are mentioned and the pupils are told to locate them on globes and maps. Exercises are often given which will help the pupils remember the location of places. The colored maps of the continents are so made that they resemble pictures of parts of a globe. A rather large number of uncolored maps of the world are used to show certain facts discussed in the text. The pictures are clear, generally captioned, and often have questions or descriptive material accompanying them. There are many worthwhile exercises, games, and problems which are related to the work of the book.

While carefully examining the *Introduction to World Geography* the following questions came to the reviewer's mind: (1) Has not the author gone too much in detail in a book which is to be used as possibly the first textbook in geography? (2) Are there not far too many places mentioned in the text? Advanced pupils would do well to locate such places as Kazan, Archangel, and Biloxi. (3) Is it wise to use such words as stevedores, sakiyeh, Samoyedes, and tapa in a beginning textbook?

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